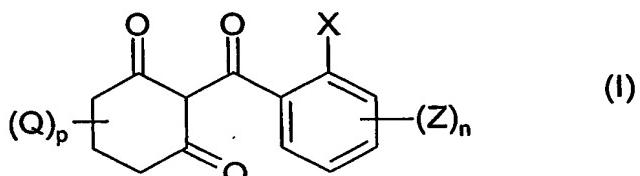


CLAIMS

1. A method for the season-long control of unwanted vegetation, said method comprising a single application of a herbicidal combination comprising a 2-(substituted benzoyl)-1,3-cyclohexanedione or metal chelate thereof, glyphosate or a salt thereof and an acetamide.
- 5
2. A method according to claim 1 wherein the 2-(substituted benzoyl)-1,3-cyclohexanedione is a compound of formula (I)



10

wherein X represents a halogen atom; a straight- or branched-chain alkyl or alkoxy group containing up to six carbon atoms which is optionally substituted by one or more groups -OR¹ or one or more halogen atoms; or a group selected from nitro, cyano, -CO₂R², -S(O)_mR¹, -O(CH₂)_rOR¹, -COR², -NR²R³, -SO₂NR²R³, -CONR²R³, -CSNR²R³ and -OSO₂R⁴;

15

R¹ represents a straight- or branched-chain alkyl group containing up to six carbon atoms which is optionally substituted by one or more halogen atoms; R² and R³ each independently represents a hydrogen atom; or a straight- or branched-chain alkyl group containing up to six carbon atoms which is optionally substituted by one or more halogen atoms;

20

R⁴ represents a straight- or branched-chain alkyl, alkenyl or alkynyl group containing up to six carbon atoms optionally substituted by one or more halogen atoms; or a cycloalkyl group containing from three to six carbon atoms; each Z independently represents halo, nitro, cyano, S(O)_mR⁵, OS(O)_mR⁵, C₁₋₆

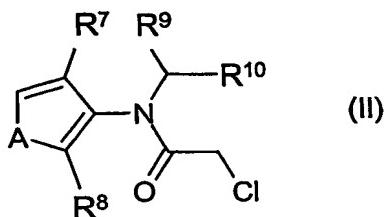
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alkyl, C₁₋₆ alkoxy, C₁₋₆ haloalkyl, C₁₋₆ haloalkoxy, carboxy, C₁₋₆ alkylcarbonyloxy, C₁₋₆ alkoxycarbonyl, C₁₋₆ alkylcarbonyl, amino, C₁₋₆ alkylamino, C₁₋₆ dialkylamino having independently the stated number of carbon atoms in each alkyl group, C₁₋₆ alkylcarbonylamino, C₁₋₆ alkoxycarbonylamino, C₁₋₆ alkylaminocarbonylamino, C₁₋₆ dialkylaminocarbonylamino having independently the stated number of carbon atoms in each alkyl group, C₁₋₆

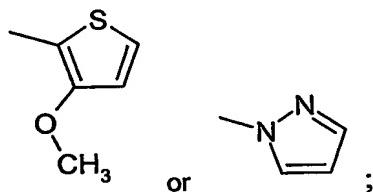
alkoxycarbonyloxy, C₁₋₆ alkylaminocarbonyloxy, C₁₋₆ dialkylcarbonyloxy, phenylcarbonyl, substituted phenylcarbonyl, phenylcarbonyloxy, substituted phenylcarbonyloxy, phenylcarbonylamino, substituted phenylcarbonylamino, phenoxy or substituted phenoxy;

- 5 R⁵ represents a straight or branched chain alkyl group containing up to six carbon atoms;
each Q independently represents C₁₋₄ alkyl or -CO₂R⁶ wherein R⁶ is C₁₋₄ alkyl;
m is zero, one or two;
n is zero or an integer from one to four;
10 r is one, two or three; and
p is zero or an integer from one to six
and any agriculturally acceptable metal chelate thereof formula (II).

3. A method according to claim 2, wherein X is chloro, bromo, nitro, cyano, C_{1-C4} alkyl, -CF₃, -S(O)_mR¹, or -OR¹; each Z is independently chloro, bromo, nitro, cyano, C_{1-C4} alkyl, -CF₃, -OR¹, -OS(O)_mR⁵ or -S(O)_mR⁵; n is one or two; and p is zero, one or two.
4. A method according to claim 3, wherein the 2-(substituted benzoyl)-1,3-cyclohexanedione of formula (I) is selected from the group consisting of 2-(2'-nitro-4'-methylsulphonylbenzoyl)-1,3-cyclohexanedione, 2-(2'-nitro-4'-methylsulphonyloxybenzoyl)-1,3-cyclohexanedione, 2-(2'-chloro-4'-methylsulphonylbenzoyl)-1,3-cyclohexanedione, 4,4-dimethyl-2-(4-methanesulphonyl-2-nitrobenzoyl)-1,3-cyclohexanedione, 2-(2-chloro-3-ethoxy-4-methanesulphonylbenzoyl)-5-methyl-1,3-cyclohexanedione and 2-(2-chloro-3-ethoxy-4-ethanesulphonylbenzoyl)-5-methyl-1,3-cyclohexanedione.
- 25
5. A method according to any one of claims 1 to 4, wherein the acetamide is a chloroacetamide or an oxyacetamide.
- 30
6. A method according to claim 5, wherein the chloroacetamide is a compound of formula (II)



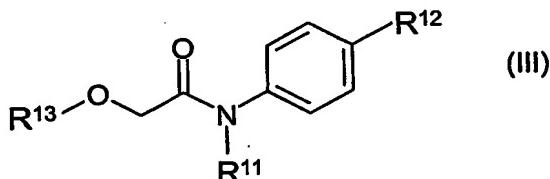
wherein R⁷ is hydrogen, methyl or ethyl; R⁸ is hydrogen, methyl or ethyl; R⁹ is hydrogen or methyl; R¹⁰ is methyl, -OCH₃, -CH₂OCH₃, -OCH₂CH₃, -CH₂OCH₂CH₂CH₃, -OCH(CH₃)₂, -OCH₂CH₂CH₂CH₃ or a group



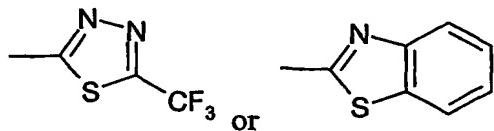
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and A is S or CH=CH.

7. A method according to claim 6, wherein A is CH=CH; R⁷ is hydrogen, methyl or ethyl; R⁸ is hydrogen, methyl or ethyl; R⁹ is hydrogen or methyl; R¹⁰ is methyl, -OCH₃, -CH₂OCH₃, -OCH₂CH₃, -CH₂OCH₂CH₂CH₃, -OCH(CH₃)₂, or -OCH₂CH₂CH₂CH₃.
- 10
8. A method according to claim 7, wherein the chloroacetamide is selected from the group consisting of metolachlor, acetochlor and alachlor.
- 15
9. A method according to claim 8, wherein the chloroacetamide is s-metolachlor.
10. A method according to claim 6, wherein A is S; R⁷, R⁸ and R⁹ are methyl; and R¹⁰ is methoxymethyl.
- 20
11. A method according to claim 5, wherein the oxyacetamide is a compound of formula (III)



wherein R¹¹ is hydrogen, methyl, ethyl, propyl or isopropyl; R¹² is hydrogen or halo; and R¹³ is a group



- 5 12. A method according to claim 11, wherein R¹¹ is methyl or isopropyl; R¹² is hydrogen or fluoro.
- 10 13. A method according to claim 12, wherein the oxyacetamide is flufenacet or mefanacet.
- 15 14. A method according to claim 13, wherein the oxyacetamide is flufenacet.
- 20 15. A method according to any one of claims 1 to 14, wherein the combination further comprises one or more additional active ingredients.
- 25 16. A method according to any one of claims 1 to 15, wherein the combination is applied post-emergence.
- 30 17. The use of a herbicidal combination comprising a 2-(substituted benzoyl)-1,3-cyclohexanedione or metal chelate thereof, glyphosate or a salt thereof and an acetamide for the season-long control of unwanted vegetation by a single application of the combination.
- 18. A herbicidal composition comprising a 2-(substituted benzoyl)-1,3-cyclohexanedione or metal chelate thereof, glyphosate or a salt thereof and an acetamide, provided that (i) when the 2-(substituted benzoyl)-1,3-cyclohexanedione is mesotrione, then the acetamide is not metolachlor, acetochlor, alachlor or dimethenamide, and (ii) when the acetamide is dimethenamide, then the 2-(substituted benzoyl)-1,3-cyclohexanedione is not 2-(2-chloro-4-methanesulfonylbenzoyl)-1,3-cyclohexanedione or 2-(4-methylsulfonyloxy-2-nitrobenzoyl)-4,4,6,6-tetramethyl-1,3-cyclohexanedione.